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## Volume 14 - Issue 3, 2014 - Technology Update: Digital Breast Tomosynthesis

### Carestream Vue Mammo Workstation and Vue Pacs Solution

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If Digital Breast Tomosynthesis is on offer at your image centre, Carestream offers a DBT module for its Vue Mammo Workstation and PACS to optimise reading, workflow, archiving and storage. Not only does the module benefit the radiologist, but the use of DBT has been shown to reduce the patient recall rate. Furthermore, if synthetic 2D views are generated from the DBT acquisition, the patient is exposed to less radiation.

The CARESTREAM Vue Mammo Workstation and PACS is a single desktop multi-modality reading solution that can store and display any vendor DICOM compliant DBT, mammography and general radiology exams, in addition to non-DICOM data associated with the patients.

#### Key Advantages

##### Time Saving

By reading all procedures from a single workstation or desktop the radiologists save a significant amount of time by not having to move between different viewers, log in multiple times, or become familiar with multiple user interfaces. All patient data is available from a single desktop. Pre-fetching means that priors are immediately available while reading the current case, and this helps maintain the efficient workflow.

##### Scalable

The various configurations available assure users that the solution is architected to their environment and needs, while providing a scalable solution for future growth.

##### Workflow

The Vue Connects architecture lets healthcare providers manage patient information across multi-site facilities regardless of location by synchronizing data and providing a global worklist. This allows the workload to be balanced between facilities or where physicians are available to read. The data is provided to the physicians, rather than a physician needing to move to where the data is. The Worklist Indicator allows quick identification of exams with DBT images.

##### 2D View Synthesis

Synthesising the 2D view from the 3D views benefits patients as it reduces their radiation exposure. Carestream supports the display of both conventional and synthetic 2D mammography views.

#### Key Features

The solution provides an industry-leading tool set for workflow efficiency and diagnostic confidence.

An extensive set of tools eliminates the need for physicians to manually manipulate the images, optimizes the workflow, and reduces fatigue. For

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example, the images are automatically positioned and scaled to the display, eliminating the need to manually pan and zoom them. Hanging protocols can be configured to the individual users so that the sequence of images match their reading style. A desktop keypad is provided that allows the user to quickly access their most commonly used operations with a single button press. Additionally, many of the tool further improve diagnostic confidence and improve patient care by either helping them locate lesions or provide a clear indication that all images are viewed.

The key to achieving maximum efficiency is to minimise any manual manipulations, provide the quickest access possible to the tools, and provide the most efficient means of navigating through the views and DBT slices. The features that target these efficiencies include:

- Automatic positioning and sizing of images to eliminate manual manipulations. This includes the display of images at the same physical size when different vendors are being compared, for ease of comparing a change in pathology.
- Automatic skin line detection for positioning. This also allows for only inversion or window/level of tissue area.
- Intelli zoom, which displays segments of the image at original resolution, and at the same size if desired.
- Drag and Drop images as you read with automatic resizing and repositioning.
- Hanging Protocols that can be customised and configured at the user, group, or system level. Protocols can be designed to support just 2D views, 2D and DBT, or other combinations.
- Cross Reference Lines, a digital triangulation tool. This allows the user to quickly access the location of lesion or area of interest across views.
- Image map, a graphical orthogonal view of the breast with a reference line to indicate where the currently displayed slice is. As the DBT slices are scrolled through, the reference reflects the new position in the breast. This provides the user with an intuitive graphical view of the breast so they are always sure what they are looking at.
- Concurrent Magnifying Glasses provide a close-up comparison of pathology across multiple views and procedures.
- Scrolling tools to quickly scroll through the DBT data. These range from manual scrolling using the graphical user interface or a scroll wheel to a configurable cine mode.
- Annotation and mark-up tools to save and catalogue key images.
- Sticky Notes that can be used for communications between other users outside of the report.
- Key Images and Significant Series. The key images feature allows the user to identify a specific image for viewing later (by the Referring Physicians, Technologists and Radiographer.) The significant series allows the users to identify the consecutive images for viewing later.
- Teaching files that de-identify and mark specific studies for later review (e.g. for a tumour board, teaching etc.)
- My Tab that allows a user to customise the tools available in the tool bar to just the ones they use. There is a configurable right-click menu to customise the tools available in it.
- Blacklit desktop keypad for a single click navigation for user preferring to navigate using a keypad.

## Network Infrastructure

The solution is offered in standalone, enterprise, and multi-site configurations. IHE compliance and integration through industry standard protocol allows for integration with existing equipment or the addition of other vendor equipment.

From a storage perspective, Carestream software utilizes a 64-bit architecture so that large data sets, such as DBT, are handled well. This architecture allows to improve display performance as the available memory can be better utilised. Additionally, Carestream recommends the configuration of pre-fetching rules so that prior exams can be moved to the online storage and allow for immediate display when needed.

Once centres decide to implement DBT, they need to upgrade their network, as both modality and PACS vendors recommend a 1 gigabit network. It is recommended that lossless compression be used on both the sending and receiving ends of the data to ensure first movement of data.

## What Customers Say

Ron Muscosky, Worldwide Product Line Manager Healthcare Information Solutions at Carestream says that feedback from radiologists has been very positive.

*"Carestream has embraced DBT since it was first being introduced, so we are much further ahead of most other competitors. Customers comment most on the multi-modality support, flexibility of hanging protocols, extensive tool set, and ease of use. They believe these items make a significant difference in their workflow efficiency and reduction of fatigue, especially with how much more data DBT provides them to read."*

**About Carestream Health**

Carestream is a worldwide provider of dental and medical imaging systems and IT solutions, X-ray imaging systems for non-destructive testing, and advanced materials for the precision films and electronics markets—all backed by a global service and support network. For more information about the company's broad portfolio of products, solutions and services, please contact your Carestream representative or visit: [www.carestream.com](http://www.carestream.com)

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